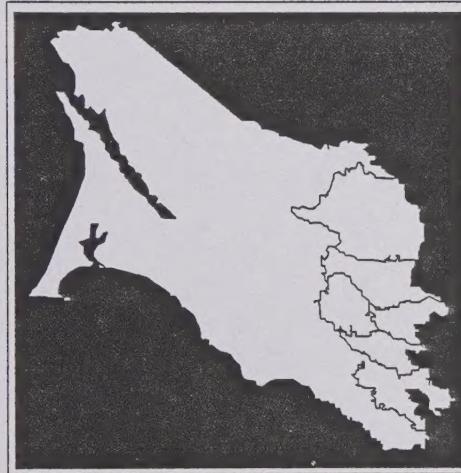


The Marin Countywide Plan

Noise Element Technical Report #1 Summary of Existing Noise Data



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MARIN COUNTY NOISE MEASUREMENT SURVEY

The Marin County Noise Element has been updated along with the Marin Countywide Plan. In developing the work program for the Noise Element, staff determined that measurements of representative noise-sensitive locations countywide were necessary for the accurate assessment of noise conditions, and for the development of appropriate noise performance standards.

Traffic noise is the primary source of noise in Marin County. Community noise survey sites were selected for noise measurements which reflect a range of land use, topographical, and traffic noise source conditions. The following sites were selected:

Site	Existing Land Use	Topography	Noise Source
Black Point	Industrial Residential	Flat/Surrounded by Hills	Highway 37 Railroad, Industry
St. Vincent's/Silveira	Agricultural Residential Institutional	Flat/Hill in Front	Highway 101
Woodacre	Residential	Valley	Sir Francis Drake
Cheese Factory	Industry	Valley	Point Reyes/ Petaluma Road
Point Reyes Station	Residential Commercial	Flat / Hills	Highway 1
Marin City Redevelopment Area: Flea Market Site	Undeveloped	Flat	Highway 101

The report that follows is a summary of the noise measurement studies. The noise level resulting from a highway or a local street is influenced by a number of factors. The most significant of these factors include: the hourly volumes of trucks and cars, the gradient of the roadway, the actual travel speed along the road, the presence or absence of noise attenuating barriers between the roadway and the receiver, and the distance between the roadway and the receiver.

To evaluate the existing noise conditions within Marin County, noise measurements were taken at six roadside locations. The sites were chosen to cover the range of ground transportation facilities existing in Marin. The measurements consisted of continuous 24-hour measurements at three highway locations and longer-term measurements at three other roadside locations along coastal access routes exhibiting different weekday and weekend traffic volumes. The data obtained from these measurements provided information about the hourly variation in noise levels throughout the day and night, and the 24-hour average noise level (Ldn). Technical terms are defined in Table 7 at the end of this report.

The location of each measurement site is shown on the accompanying site map as well as on Figures 1 through 6. The data obtained from the measurements are summarized in Tables 1 through 6. A brief description of each location and the results of the monitoring are included below.

Site 1 represents typical noise exposure at 106 feet from the centerline of Highway 37. In Table 1, the effects of traffic patterns on the noise environment are well illustrated. As the "Leq" and the "Number of Times Sound Level Exceeded 80 dBA" columns indicate, major traffic activity occurs between 6 a.m. and 6 p.m., as expected for a major highway. (Since the highest sound levels along a roadway are typically generated by heavy trucks, the "# of times sound level exceeded" column gives an indication of truck activity for measurement locations within 100 feet of the roadway). The Ldn for this location was calculated to be 71 dB. The nearby liquor distribution warehouse and lumberyard did not generate significant noise.

Site 2 represents the noise exposure at 800 feet from the centerline of Highway 101. This location had approximately a 130 degree horizontal view of the highway (a hill partially obscured the freeway). The contribution to the noise level from exiting and entering highway traffic was not significant. The Ldn calculated for this site was 56 dB. Because this measurement location is 800 feet from Highway 101, the threshold was lowered. Still, only two events in the 24 hour period exceeded 75 dBA.

Measurements for Site 3 were made in Woodacre at 45 feet from the centerline of Sir Francis Drake Boulevard. An Ldn of 71 dB was calculated for both the typical weekday and weekend measurements.¹

¹ The hour between 5 p.m. and 6 p.m. was lost on August 7 due to a battery change necessary to keep the monitor running through the weekend.

However, the traffic patterns which yielded this number were quite different. On Friday, August 7, the Leq between the typical commute hours of 6 a.m. and 9 a.m. ranged from 67 to 70 dB. The Leq during the same period on Saturday, August 8, ranged between 62 and 67 dB. However, comparison of the hours between 10 p.m. and 3 a.m. show the Leq for Saturday running consistently 2 dB higher than that for Friday.

Site 4, 37 feet from the centerline of the Petaluma/Point Reyes Road near the Marin-Sonoma Cheese Factory, yielded an Ldn of 68 dB on Friday, August 7 and an Ldn of 67 dB on Saturday, August 8. The effect of traffic patterns on the Leq measurements for this location was similar to that of Site 3.

Site 5 was located just south of Point Reyes Station, 43 feet from the centerline of Highway 1. The Ldn measured for Friday, August 14 was 62 dB, and the Ldn was 64 dB for Saturday, August 15. Except for the greater discrepancy between the Ldn calculations, variations in noise levels between the weekday and weekend are similar to those of Sites 3 and 4. The Lmax of 100 dBA measured during the 5 p.m. hour on August 15 was likely generated by the siren of an emergency vehicle.²

Measurements for Site 6 were made in Marin City, within the flea market parking lot. The monitor was located approximately 100 feet from the near southbound lane of Highway 101. The Ldn calculated for this site was 75 dB. Site 6 was the noisiest of all measurement locations, since only the hours between 12 a.m. and 5 a.m. show any signs of traffic letup.

² The hour between 3 and 4 pm was lost on August 14 due to a battery change necessary to keep the monitor running through the weekend.

Table 1. Measurement Site 1
Atherton Avenue Exit, 106 Feet From Centerline of Highway 37
10 a.m., August 5, 1987 to 10 a.m., August 6, 1987

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Aug 5	10:00 a.m.	69	85	47	79	72	65	56	10
	11:00 a.m.	69	85	47	79	72	65	55	12
	12:00 p.m.	67	82	46	77	71	64	54	4
	1:00 p.m.	68	85	45	78	72	63	53	5
	2:00 p.m.	70	89	45	81	73	64	55	10
	3:00 p.m.	69	87	44	79	73	65	57	7
	4:00 p.m.	69	91	47	78	73	67	59	5
	5:00 p.m.	69	83	49	78	73	67	61	4
	6:00 p.m.	69	81	45	77	73	67	59	1
	7:00 p.m.	67	81	45	77	71	65	56	1
	8:00 p.m.	67	81	45	77	70	62	53	1
	9:00 p.m.	66	85	44	77	69	60	51	2
	10:00 p.m.	65	83	43	76	69	59	48	1
Aug 6	11:00 p.m.	63	81	39	75	68	56	45	1
	12:00 a.m.	62	79	37	74	67	53	42	0
	1:00 a.m.	59	79	35	73	61	43	38	0
	2:00 a.m.	57	77	32	71	57	39	35	0
	3:00 a.m.	55	77	32	69	55	40	35	0
	4:00 a.m.	57	79	36	70	59	45	40	0
	5:00 a.m.	63	85	39	74	67	57	47	1
	6:00 a.m.	68	83	51	77	71	66	61	4
	7:00 a.m.	69	81	50	78	72	67	61	3
	8:00 a.m.	73	99	51	80	73	65	59	5
	9:00 a.m.	69	85	47	79	72	65	57	6

Ldn = 71 dB

Table 2. Measurement Site 2
St. Vincents Drive, 800 Feet From Centerline of Highway 101
10 a.m., August 5, 1987 to 10 a.m., August 6, 1987

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Aug 5	10:00 a.m.	51	67	42	61	53	47	45	0
	11:00 a.m.	49	63	41	59	53	47	44	0
	12:00 p.m.	53	73	41	65	56	49	45	0
	1:00 p.m.	54	75	41	67	55	47	43	0
	2:00 p.m.	53	76	41	67	55	47	43	1
	3:00 p.m.	55	73	40	67	59	51	43	0
	4:00 p.m.	51	67	40	61	55	47	43	0
	5:00 p.m.	51	69	40	61	53	47	44	0
	6:00 p.m.	49	62	39	57	52	47	43	0
	7:00 p.m.	50	68	40	59	53	47	45	0
	8:00 p.m.	53	71	41	66	55	47	44	0
	9:00 p.m.	49	61	41	57	51	47	43	0
	10:00 p.m.	50	71	39	59	53	47	43	0
	11:00 p.m.	49	69	35	59	52	47	43	0
Aug 6	12:00 a.m.	49	63	35	57	53	47	43	0
	1:00 a.m.	47	69	33	56	50	43	37	0
	2:00 a.m.	47	59	31	57	51	43	37	0
	3:00 a.m.	47	59	31	57	51	43	37	0
	4:00 a.m.	48	67	36	59	51	45	39	0
	5:00 a.m.	50	63	39	57	53	48	45	0
	6:00 a.m.	53	68	43	59	55	51	47	0
	7:00 a.m.	53	75	43	65	55	49	46	0
	8:00 a.m.	55	76	42	66	55	49	45	1
	9:00 a.m.	51	71	41	59	53	47	43	0

Ldn = 56 dB

Table 3. Measurement Site 3
Woodacre, 45 Feet From Centerline of Sir Francis Drake Boulevard
5 p.m., Thursday, August 6, 1987 to 10 p.m., Sunday, August 9, 1987

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Aug 6	5:00 p.m.	69	87	40	80	74	66	52	8
	6:00 p.m.	68	84	40	77	73	64	50	3
	7:00 p.m.	68	87	42	78	72	64	50	9
	8:00 p.m.	67	85	38	78	72	60	46	4
	9:00 p.m.	67	91	34	76	71	58	42	3
	10:00 p.m.	65	81	32	75	70	56	40	1
	11:00 p.m.	66	92	26	76	69	50	34	3
Aug 7	12:00 p.m.	62	86	24	75	64	42	29	1
	1:00 p.m.	60	82	24	73	61	37	26	2
	2:00 a.m.	56	78	24	71	51	28	25	0
	3:00 a.m.	55	76	24	70	52	28	24	0
	4:00 a.m.	54	76	23	70	53	28	24	0
	5:00 a.m.	61	84	24	74	64	41	24	1
	6:00 a.m.	67	86	26	77	72	60	42	4
	7:00 a.m.	70	85	36	79	74	65	52	9
	8:00 a.m.	69	89	40	78	73	64	52	8
	9:00 a.m.	68	92	36	78	72	62	49	8
	10:00 a.m.	68	90	37	78	72	62	46	6
	11:00 a.m.	68	86	37	79	72	61	46	11
	12:00 p.m.	68	88	36	78	72	60	46	8
	1:00 p.m.	68	88	37	80	72	61	46	10
	2:00 p.m.	68	86	36	78	72	62	47	5
	3:00 p.m.	68	86	38	78	73	64	50	6
	4:00 p.m.	70	86	43	79	74	66	52	11
	--	--	--	--	--	--	--	--	--
	6:00 p.m.	69	84	37	79	74	65	51	8
	7:00 p.m.	68	84	37	77	73	62	48	5
	8:00 p.m.	67	89	35	77	72	61	47	5
	9:00 p.m.	69	97	35	78	71	59	45	4
	10:00 p.m.	65	83	33	75	71	57	44	2
	11:00 p.m.	65	85	31	76	71	57	41	2

Table 3 (continued)

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Aug 8	12:00 a.m.	65	91	27	76	69	50	39	1
	1:00 a.m.	63	83	25	75	66	46	33	2
	2:00 a.m.	61	83	25	73	61	38	27	2
	3:00 a.m.	55	77	24	71	51	31	25	0
	4:00 a.m.	56	77	25	71	53	32	27	0
	5:00 a.m.	60	85	23	74	60	33	25	1
	6:00 a.m.	62	85	24	75	65	41	27	2
	7:00 a.m.	65	83	25	77	71	54	34	5
	8:00 a.m.	66	82	29	77	71	57	41	3
	9:00 a.m.	67	83	35	77	72	62	47	3
	10:00 a.m.	68	85	37	77	73	62	45	5
	11:00 a.m.	69	88	39	77	73	64	49	4
	12:00 p.m.	69	83	39	77	73	65	51	7
	1:00 p.m.	69	81	36	77	73	65	49	2
	2:00 p.m.	68	87	39	77	72	63	47	4
	3:00 p.m.	67	81	41	76	72	63	51	1
	4:00 p.m.	68	84	39	77	73	64	51	3
	5:00 p.m.	69	83	39	77	73	65	51	2
	6:00 p.m.	69	85	43	77	73	65	51	4
	7:00 p.m.	68	85	41	77	73	63	49	2
	8:00 p.m.	68	84	40	77	73	63	49	3
	9:00 p.m.	68	91	39	77	72	61	47	3
	10:00 p.m.	67	84	34	77	71	59	43	5
	11:00 p.m.	67	91	33	79	71	57	43	9
Aug 9	12:00 a.m.	65	86	34	77	68	51	40	5
	1:00 a.m.	63	87	35	75	65	44	39	3
	2:00 a.m.	62	82	32	75	63	42	37	4
	3:00 a.m.	57	77	29	71	56	35	32	0
	4:00 a.m.	58	83	26	73	55	35	29	1
	5:00 a.m.	57	77	23	72	54	32	27	0
	6:00 a.m.	60	83	24	73	62	36	27	2
	7:00 a.m.	63	79	25	75	67	47	33	0
	8:00 a.m.	65	80	29	76	69	53	38	0
	9:00 a.m.	67	83	34	77	72	60	43	4

Ldn = 71 dB

Table 4. Measurement Site 4
Petaluma/Point Reyes Road, 37 Feet From Centerline
6 p.m., Thursday, August 6, 1987 to 6 p.m., Sunday, August 9, 1987

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Aug 6	6:00 p.m.	66	82	29	76	70	54	42	1
	7:00 p.m.	64	84	26	76	68	48	36	4
	8:00 p.m.	62	86	26	74	67	46	34	1
	9:00 p.m.	62	82	26	75	64	40	28	3
	10:00 p.m.	58	78	23	73	58	35	25	0
	11:00 p.m.	58	78	23	73	58	34	24	0
Aug 7	12:00 a.m.	55	76	22	70	46	24	23	0
	1:00 a.m.	54	74	22	70	46	24	22	0
	2:00 a.m.	54	81	22	68	41	24	23	1
	3:00 a.m.	48	75	22	64	35	24	22	0
	4:00 a.m.	56	83	22	68	36	23	22	2
	5:00 a.m.	58	86	22	73	50	24	22	1
	6:00 a.m.	65	86	22	78	69	46	30	9
	7:00 a.m.	67	84	28	78	72	55	38	8
	8:00 a.m.	67	88	35	79	72	56	42	8
	9:00 a.m.	66	86	36	78	70	54	44	8
	10:00 a.m.	66	90	38	78	69	52	44	5
	11:00 a.m.	66	84	36	78	70	54	43	8
	12:00 p.m.	70	103	37	78	70	56	49	5
	1:00 p.m.	66	90	42	78	70	56	49	4
	2:00 p.m.	66	82	40	77	70	58	51	3
	3:00 p.m.	67	82	44	78	72	59	52	2
	4:00 p.m.	67	87	47	79	72	60	54	8
	5:00 p.m.	67	86	46	78	73	61	53	7
	6:00 p.m.	67	86	42	77	72	58	48	4
	7:00 p.m.	65	82	33	76	70	52	42	4
	8:00 p.m.	64	83	26	76	68	48	34	2
	9:00 p.m.	62	84	26	76	66	44	31	4
	10:00 p.m.	60	80	25	74	62	41	30	1
	11:00 p.m.	58	80	25	73	56	30	27	1

Ldn = 68 dB

Table 4 (continued)

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Aug 8	12:00 a.m.	58	78	26	72	58	32	28	0
	1:00 a.m.	56	79	26	72	46	30	28	0
	2:00 a.m.	56	82	27	72	48	32	29	2
	3:00 a.m.	55	82	24	70	42	30	26	1
	4:00 a.m.	55	78	23	71	46	26	24	0
	5:00 a.m.	58	80	22	73	51	28	23	1
	6:00 a.m.	62	84	24	76	62	40	28	7
	7:00 a.m.	62	80	26	75	66	43	32	1
	8:00 a.m.	65	82	29	77	70	50	37	7
	9:35 a.m.	64	83	33	77	69	49	38	1
	10:00 a.m.	65	81	33	76	70	53	41	3
	11:00 a.m.	65	83	33	75	71	57	41	1
	12:00 p.m.	66	83	39	77	71	57	45	1
	1:00 p.m.	65	85	36	76	69	57	47	2
	2:00 p.m.	66	87	39	77	71	57	49	3
	3:00 p.m.	65	85	34	76	71	57	45	1
	4:00 p.m.	66	81	39	77	71	58	47	3
	5:00 p.m.	67	83	35	77	71	57	45	9
	6:00 p.m.	67	84	35	78	71	57	43	7
	7:00 p.m.	65	83	29	77	71	51	37	4
	8:00 p.m.	65	91	28	77	69	47	35	5
	9:00 p.m.	63	81	29	75	67	45	33	1
	10:00 p.m.	62	83	29	75	66	42	32	1
	11:00 p.m.	61	81	29	75	64	38	31	3
Aug 9	12:00 a.m.	59	79	29	74	59	36	31	0
	1:00 a.m.	58	81	27	73	55	36	31	1
	2:00 a.m.	53	75	25	70	45	29	26	0
	3:00 a.m.	51	79	25	67	38	27	25	0
	4:00 a.m.	53	78	23	68	36	27	25	0
	5:00 a.m.	55	80	21	71	42	23	22	0
	6:00 a.m.	61	84	22	75	59	35	26	6
	7:00 a.m.	63	81	24	76	65	45	32	5
	8:00 a.m.	63	83	27	76	65	42	33	4
	9:00 a.m.	65	87	30	76	69	55	39	3
	10:00 a.m.	66	86	34	77	71	57	44	5
	11:00 a.m.	67	85	36	77	71	57	45	4
	12:00 p.m.	67	87	39	78	71	61	47	6
	1:00 p.m.	69	89	41	79	72	61	47	8
	2:00 p.m.	67	87	41	78	72	61	49	6
	3:00 p.m.	67	85	41	78	71	61	47	5
	4:00 p.m.	67	83	41	77	71	61	47	3
	5:00 p.m.	67	83	37	76	71	59	45	3

Ldn = 67 dB

Table 5. Measurement Site 5
South of Point Reyes Station, 43 Feet From the Centerline of Highway 1
3 p.m., Thursday, August 13, 1987 to 2 p.m., Sunday, August 16, 1987

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Aug 13	3:00 p.m.	63	84	29	75	68	49	34	1
	4:00 p.m.	64	81	31	75	69	51	37	2
	5:00 p.m.	64	83	29	75	69	50	33	3
	6:00 p.m.	63	85	29	73	67	47	34	1
	7:00 p.m.	61	81	27	73	65	43	32	2
	8:00 p.m.	57	75	27	71	60	37	32	0
	9:00 p.m.	57	79	28	71	57	35	32	0
	10:00 p.m.	55	79	27	71	50	34	31	0
	11:00 p.m.	51	79	25	67	39	32	29	0
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Aug 14	12:00 a.m.	51	78	23	67	37	31	24	0
	1:00 a.m.	49	76	22	62	32	25	23	0
	2:00 a.m.	47	75	22	60	29	24	23	0
	3:00 a.m.	41	77	22	49	29	24	23	0
	4:00 a.m.	47	73	22	62	27	23	23	0
	5:00 a.m.	49	75	22	63	31	25	23	0
	6:00 a.m.	57	81	23	71	49	31	25	1
	7:00 a.m.	59	79	26	59	37	37	31	0
	8:00 a.m.	59	76	25	72	61	35	29	0
	9:00 a.m.	62	83	26	75	66	43	31	3
	10:00 a.m.	63	83	28	75	67	45	33	2
	1:00 a.m.	63	79	27	75	69	51	33	0
	12:00 p.m.	63	83	29	75	69	52	36	2
	1:00 p.m.	63	81	31	75	69	51	39	1
	2:00 p.m.	63	80	30	75	69	51	39	0
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	4:00 p.m.	65	81	30	75	69	55	41	2
	5:00 p.m.	65	85	28	75	69	53	35	3
	6:00 p.m.	63	81	28	74	67	47	33	1
	7:00 p.m.	62	84	24	73	67	45	30	1
	8:00 p.m.	59	77	26	73	63	37	28	0
	9:00 p.m.	57	77	25	71	57	31	27	0
	10:00 p.m.	53	73	23	69	51	29	25	0
	11:00 p.m.	55	79	23	70	49	27	25	0

Ldn = 62 dB

Table 5 (continued)

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Aug 15	12:00 a.m.	53	77	22	69	48	25	23	0
	1:00 a.m.	52	75	22	68	36	25	23	0
	2:00 a.m.	49	79	22	63	27	25	24	0
	3:00 a.m.	49	79	21	57	25	25	23	0
	4:00 a.m.	47	75	21	60	25	23	22	0
	5:00 a.m.	47	74	21	60	23	22	21	0
	6:00 a.m.	53	81	21	69	33	23	22	1
	7:00 a.m.	57	81	22	71	51	27	23	1
	8:00 a.m.	60	79	23	73	64	34	25	0
	9:00 a.m.	62	79	24	73	67	43	27	0
	10:00 a.m.	64	87	25	75	69	50	29	4
	11:00 a.m.	65	89	26	76	69	57	33	4
	12:00 p.m.	65	85	28	75	69	55	35	4
	1:00 p.m.	65	89	31	75	69	55	38	3
	2:00 p.m.	66	91	35	77	69	57	40	7
	3:00 p.m.	66	90	33	76	69	58	42	6
	4:00 p.m.	65	80	31	75	69	58	41	0
	5:00 p.m.	71	100	28	79	70	59	35	10
	6:00 p.m.	65	83	29	75	69	58	39	2
	7:00 p.m.	63	85	27	74	69	53	34	2
	8:00 p.m.	61	80	25	72	66	47	29	0
	9:00 p.m.	60	79	24	72	65	45	27	0
	10:00 p.m.	57	82	22	71	57	27	23	1
	11:00 p.m.	55	77	22	70	54	26	23	0
Aug 16	12:00 a.m.	53	89	74	22	69	47	23	0
	1:00 a.m.	53	77	22	69	37	25	23	0
	2:00 a.m.	51	77	22	65	29	23	23	0
	3:00 a.m.	50	75	21	66	27	23	22	0
	4:00 a.m.	50	77	22	65	26	23	23	0
	5:00 a.m.	51	77	21	67	31	23	22	0
	6:00 a.m.	51	73	22	67	43	25	23	0
	7:00 a.m.	61	82	22	75	59	27	23	5
	8:00 a.m.	62	85	23	75	66	37	26	3
	9:00 a.m.	65	91	32	75	68	47	37	3
	10:00 a.m.	64	87	27	75	69	49	35	1
	11:00 a.m.	66	93	29	75	69	55	35	4
	12:00 p.m.	67	96	25	76	69	55	33	3
	1:00 p.m.	65	83	27	75	69	57	36	4

Ldn = 64 dBA

Table 6. Measurement Site 6
Flea Market Parking Lot, 100 Feet From Centerline of Near Lane of Highway 101
4 p.m., September 3, 1987 to 4 p.m., September 4, 1987

Date	Time	Leq	Lmax	Lmin	L01	L10	L50	L90	# of Times Sound Level Exceeded 80 dBA
Sept 3	4:00 p.m.	71	88	65	79	73	70	68	4
	5:00 p.m.	71	83	65	75	72	71	69	1
	6:00 p.m.	71	93	63	77	72	70	68	3
	7:00 p.m.	70	79	63	75	72	69	67	0
	8:00 p.m.	69	77	59	74	71	69	67	0
	9:00 p.m.	69	81	61	74	71	68	65	1
	10:00 p.m.	68	79	57	73	70	67	64	0
	11:00 p.m.	67	78	57	72	69	65	61	0
	12:00 a.m.	65	89	51	73	67	63	57	1
	1:00 a.m.	62	77	45	71	65	59	53	0
	2:00 a.m.	61	77	39	71	65	56	47	0
	3:00 a.m.	62	83	39	73	65	55	47	1
Sept 4	4:00 a.m.	65	81	38	75	68	61	49	1
	5:00 a.m.	69	81	51	75	72	67	62	1
	6:00 a.m.	73	81	63	77	75	72	69	1
	7:00 a.m.	73	79	67	77	75	73	71	0
	8:00 a.m.	73	85	69	77	75	73	71	1
	9:00 a.m.	73	81	66	77	73	72	70	1
	10:00 a.m.	71	81	63	76	73	71	69	3
	11:00 a.m.	71	89	63	77	73	71	69	3
	12:00 p.m.	71	79	63	76	73	71	68	0
	1:00 p.m.	71	81	63	77	73	71	69	2
	2:00 p.m.	71	81	62	75	73	71	68	2
	3:00 p.m.	71	80	63	75	72	70	67	0

Ldn = 75 dB

APPENDICES

Appendix 1. Definitions of Acoustical Terms

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level (dB)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network.. The A-weighting filter deemphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
L10, L50, L90	The A-weighted noise levels that are exceeded 10%, 50% and 90% of the time during the measurement period.
Equivalent Noise Level (L _{eq})	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to levels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Noise Level (L _{dn})	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Appendix 2. Road Segments Used for Noise Contour Modeling

Road Name	Segment
Alameda Del Prado south	Ignacio Boulevard to Highway 101 ramp
Atherton Avenue	Olive Avenue to Bugeia Avenue
Bel Marin Keys Boulevard west	Montego Key to Hamilton Drive
Bon Air Road	South Eliseo Drive to Sir Francis Drake Boulevard
Butterfield Road	Deer Hollow Road to Legend Road
College Avenue	Sir Francis Drake Boulevard to Kent Avenue
Highway 1	Almonte Boulevard to Highway 101
Highway 1	Marshall-Petaluma Road to Pt. Reyes-Petaluma Road
Highway 1	Olema-Bolinas Road to Panoramic Highway
Highway 1	Panoramic Highway to Loring Avenue
Highway 1	Sir Francis Drake (from west) to Sir Francis Drake (from east)
Highway 1	Whitaker Bluff to Dillon Beach Road
Highway 101	Golden Gate Bridge to Sausalito Lateral
Highway 101	Bridgeway Boulevard to Shoreline Highway
Highway 101	Sonoma County Line to Atherton Avenue
Highway 101	Shoreline Highway to Redwood Frontage Road
Highway 101 north	Miller Creek Road to Alameda del Prado
Highway 37	Atherton Avenue to Harbor Drive
Highway 580	San Quentin to Bellam Boulevard
Lucas Valley Road	Las Gallinas Avenue to Highway 101
Marshall-Petaluma Road	Shoreline Road to Hicks Valley Road
Nicasio Valley Road	Pt. Reyes-Petaluma Road to Lucas Valley Road
Nicasio Valley Road	Sir Francis Drake Boulevard to Lucas Valley Road
North San Pedro Road	Civic Center Drive to Woodoaks Drive
Novato Boulevard	Pt. Reyes-Petaluma Road to San Marin Drive
Panoramic Highway	Sequoia Valley Road to Highway 1
Pt. Reyes-Petaluma Road	Hicks Valley Road to Novato Boulevard
Point Reyes-Petaluma Road	Highway 1 to Nicasio Valley Road
Seminary Drive	Ricardo Way to Topside Way
Sir Francis Drake Boulevard	Platform Bridge Road to Highway 1
Sir Francis Drake Boulevard	El Portal Drive to Highway 101
Sir Francis Drake Boulevard	Oak Manor Drive to Nicasio Valley Road
Sir Francis Drake Boulevard	San Quentin to Larkspur Landing Circle
Tiburon Boulevard east	Redwood Frontage Road to Strawberry Drive
Wolfe Grade	Sir Francis Drake Boulevard to San Rafael Avenue
Almonte Boulevard	Shoreline Highway to Miller Avenue
Las Gallinas Avenue	Lucas Valley Road to Miller Creek
Lucas Valley Road	Las Gallinas Avenue to Idylberry Road
Miller Creek Road	Marinwood Avenue to Las Gallinas Avenue
N. San Pedro Road	Civic Center Drive to Meadow Drive



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